ZANZIBAR PROTECTORATE

Annual Report

of the

Department of Agriculture

1953

ZANZIBAR
Printed by the Government Printer, 1954
Price: Shs. 2/-

DEPARTMENT OF AGRICULTURE: PROTECTORATE STAFF

Director ...	A. K. Briant, M.A. (Cantab), Dip. Agric. (Cantab), A.I.C.T.A. (Trinidad).
Senior Agricultural Officer	G. E. Tidbury, B.Sc. (Lond.), A.R.C.S., A.I.C.T.A. (Trinidad).
Agricultural Officers ...	G. W. Anderson, B.Sc. (Edin.), A.I.C.T.A. (Trinidad).
	R. K. Tremlett, B.Sc. (Lond.), A.R.C.S., A.I.C.T.A. (Trinidad).
	D. W. Winter, B.Sc. (St. Andrews), A.I.C.T.A. (Trinidad).
	G. D. Wilkinson, B.Sc. (Lond.), N.D.A.
Agricultural Development Officer (Temporary)	O. de Manbey.
Assistant Agricultural Officer	Othman Shariff, S.D.A., S.D.D. (Glas.)
Government Chemist ...	*Vacant.*
Veterinary Officer ...	Ahmed Rashid, M.R.C.V.S. (Edin.).
Manager of Plantations ...	Ali Khamis.
Inspector of Produce ...	A. C. E. Callan.
Head Clerk ...	L. Paul.

TEMPORARY DEVELOPMENT STAFF

Farm Manager ...	Wing-Commander J. Barrett, D.F.C., Cert. Egerton School of Agriculture.
Agricultural Development Officer ...	K. A. Bowden, N.D.A., M.R.A.C.
Forestry Officer ...	T. A. Couppis, B.A. (Oxon).
Assistant Forest Officer ...	A. A. Wadud.
Fisheries Officer ...	K. F. King.
Shipwright ...	G. Slater.
Field Supervisor, Fruit Scheme	I. G. C. Squire.
Manager, Experimental Control of Clove Diseases	T. E. C. Robins.
Entomologist ...	F. L. Vanderplank, B.Sc., M.Sc., Ph.D.
Field Assistant to the Entomologist	L. J. Stevens.
Scientific Assistant ...	Miss E. M. Tait, B.Sc.

CONTENTS

SECTION A. AGRICULTURE IN THE PROTECTORATE

Page

1. General - - - - - - - - - 1
2. Weather - - - - - - - - - 1
3. Principal Crops: Cloves - - - - - 2
   Coconuts and Copra - - 3
4. Minor Export Crops - - - - - - 4
5. Foodcrop Production - - - - - - 5
6. Animal Husbandry - - - - - - 5

SECTION B. THE WORK OF THE DEPARTMENT OF AGRICULTURE

1. Staff - - - - - - - - - - 8
2. The Development Programme - - - 8
3. Crop Husbandry:
   - Cassava - - - - - - - - 9
   - Chillies - - - - - - - - 9
   - Citrus - - - - - - - - 10
   - Cloves - - - - - - - - 10
   - Cacao - - - - - - - - 11
   - Coconuts - - - - - - - - 11
   - Coffee - - - - - - - - 12
   - Cotton - - - - - - - - 13
   - Derris - - - - - - - - 13
   - Rice - - - - - - - - 13
   - Sweet Potatoes - - - - - 13
   - Yams - - - - - - - - 13
   - Ylang-ylang - - - - - - 13
4. Mechanical Cultivation - - - - - 13
5. Stock Husbandry:
   - Kizimbani Stock Farm - - - - 14
   - Pasture Improvement - - - - 15
   - Cattle Industry in the Uwanda Areas - 15
   - Disease Control - - - - - 16
   - Tsetse and Trypanosomiasis Survey - 16
   - Percentage Infection with Trypanosomiasis 17

Page

6. Forestry - - - - - - - - 17
7. Fisheries - - - - - - - - 18
8. Education - - - - - - - - 19
9. Distribution of Planting Material - - - 19
10. Government Plantations - - - - 19
11. Produce Inspection - - - - - 20
12. Chemical Laboratory - - - - - 21
13. Principal Agricultural Legislation - - - 21

Appendix I.—Statement of Revenue and Expenditure of the Government Plantations 23

Appendix II.—Distribution of Planting Material - 24

Appendix III.—Domestic Exports, 1953 - - 26

Appendix IV.—Approximate Production of Cloves for Thirty-five Crop Years - - 27

Appendix V.—Monthly and Annual Rainfall Totals for the Year 1953 - - 28

ZANZIBAR PROTECTORATE

Annual Report of the Department of Agriculture, 1953

SECTION A. AGRICULTURE IN THE PROTECTORATE

1. General

Although 1953 was a year of grave disappointment and financial loss to many on account of the big drop in clove prices, the general level of agricultural prosperity was satisfactory. Ample and well distributed rainfall enabled plenty of food to be produced locally in spite of the large demands which accompanied a bumper clove crop. Imported food was in better supply than at any time for many years and for the greater part of the year rice was sold below controlled prices.

The current clove crop, which commenced during the second half of the year, is a bumper one but clove prices, which rocketted throughout 1951 and 1952 and reached the unprecedented level of Shs. 902 per 100 lb. in January, 1953, fell precipitously throughout the year and, at the end of December, appeared to have reached a steady level at just over Shs. 200. The prices paid for picking cloves at the beginning of the year rose as high as Shs. 3/50 per *pishi* and in the middle of the year the contracted rates for picking the main crop were fixed at levels higher than the growers could really afford to pay. The holding of large stocks produced at such comparatively high costs considerably taxed the financial resources of the growers and stockists alike. For this reason, a marked feature of the year was the depositing by growers of a large proportion of the harvested cloves with the Clove Growers Association for advances at the rate of Shs. 168 per cental in the hope that the market would rise at a later date.

2. Weather

The phenomenal drought of 1952 was broken by showers in January of this year but conditions remained very dry until the masika rains became heavy and continuous in early April. Thereafter, apart from a dry June, showers continued until the end of the year. These splendid growing conditions enabled a good rice crop and ample staple foods of other kinds to be grown and also ensured the good establishment of tree crops in the field. This was particularly valuable as this was the first year for the distribution of citrus plants under the Fruit Scheme.

Although the year's totals of rainfall were not really above average they were practically double the 1952 figures in most areas. Thus the average of ten Pemba stations for 1953 was 83.63" compared with 44.54" in 1952.

3. Principal Crops

Cloves.—The last bumper clove crop was in 1950/51 and the current 1953/54 crop is likely to equal or exceed it. The intervening crops have been small ones as is invariably the case with so irregularly bearing a crop as the clove.

Picking the 1952/53 crop was completed in February, and by the end of the crop year on 30th June, the cloves brought to market amounted to only 173,745 frasilas, a very low figure indeed and the smallest crop on record for many years except for the 1938/39 harvest which followed the record season of 1937/38.

Of this small crop, Pemba provided some 47.3 per cent as follows:—

Pemba	... ...	2,881,470 lb.
Zanzibar	... ...	3,199,605 lb.
	Total ...	6,081,075 lb.

The new crop has been estimated at 12 lakhs of frasila (42,000,000 lb.) and, at the end of December, some 28,653,046 lb. had been brought to market of which 83 per cent arrived from Pemba.

On 1st July the Clove Growers Association published its fixed buying prices for the season based on a value of Shs. 200 per 100 lb. for fair quality cloves delivered in Zanzibar. This represented a Shs. 25 increase on the previous price: the price of clove-stems remained unchanged at Shs. 17/50 per 100 lb. commercial quality. The published selling prices remained only nominal although, by the end of the year, the open market prices had dropped so close to the Association's fixed buying price that there appeared a likelihood that the Association would, for the first time for many years, again purchase cloves.

Open market prices fell from Shs. 862/76 per 100 lb. fair quality cloves in January to Shs. 211/10 in December. For this reason many plantation-owners preferred to deposit their cloves with the Association for an advance of Shs. 168 per 100 lb. in the hope of a later price rise. The storage facilities of the Association were fully made use of and some 10,342,710 lb. of cloves upon which approximately £868,787 has been advanced were in the Association's safe keeping at the end of the year. This represented 36 per cent of the crop at that date.

Exports of cloves in the calendar year amounted to 182,468 centals of 100 lb., equivalent to 5.21 lakhs of frasila. Of these, 42 per cent were destined to Indonesia and 22 per cent to India. Direct importation by Indonesia reduced exports to Singapore to a very low level compared with previous years. Clove oil exports were 178,814 lb., largely taken by the United Kingdom.

During the early months of the year, when bud initials heralded a bumper crop, many persons leased crops. In spite of the obvious downward trend of prices, much wild speculation took place and crops were leased for fantastically high prices. As an example of this wild optimism, the crop on one plantation in Pemba consisting of 400 trees was leased

for Shs. 48,000. As the produce of 400 good trees in a good year after paying harvesting costs was worth about Shs. 60,000 in January, Shs. 30,000 when the harvest commenced and Shs. 15,000 at the year's end, the losses experienced by crop lessees this year may be appreciated. As an outcome many lessors agreed to accept payment in cloves at an agreed medium valuation instead of cash and deposited them with the Association. But very many lessees did not emerge unscathed and are now burdened with debts which they appear to have little chance of re-paying.

A happy feature of the bumper crop, on the other hand, was that the harvest was reaped with the minimum of severe branch breaking. Since the discovery that die-back disease is caused by the entry of the fungus *Cryptosporella* into wounds caused mainly by branch breaking, much publicity, teaching and demonstration, combined with the provision of legal deterrents, has been remarkably effective in restraining this most destructive practice.

The year has seen no fresh developments in connection with clove diseases. The Clove Research team left Zanzibar at the beginning of the year. Demonstrations of die-back control continued in Pemba where two teams of pruners are working on both Government owned and privately owned plantations. There were some improvements made in technique.

Coconuts and Copra.—Market prices for copra were satisfactory at the beginning and at the end of the year, the local price in January and December for good quality (F.M.) copra being Shs. 60.00 per 100 lb. but in July the price was little more than Shs. 40.00.

Unlike previous years when most of the copra has been crushed locally and exported as coconut oil and cake, relative prices in 1953 favoured the export of copra and forty-two per cent of the total production of copra was exported uncrushed. As strict export standards of quality were maintained, the high figure of forty-two per cent represents a very considerable improvement in the general quality of copra produced. This improvement is most satisfactory although it presents a very real problem to the oil millers who can only afford to purchase copra which does not reach an exportable standard of quality and from which they must prepare oil which itself is subject to rigid inspection before export. The oil millers thus provide a most valuable outlet for copra of lower quality while a natural price differential is maintained to encourage copra makers to improve their produce.

Exports for the year were as follows:—

	Export cwt.	*Copra equivalent tons*
Coconut oil ...	94,819	7,902
Coconut cake ...	59,192	—
Soap	299	15
Copra	5,815	5,815
Total ...		13,732

The total figure is well in excess of the average production of copra which was 11,700 tons for the previous six years. Although some stocks were held over from 1952 it is believed that still greater stocks have been held over from 1953 to 1954.

The Copra Board worked smoothly throughout the year and continued to provide copra makers with valuable services. Work on the Coconut Products Factory made good progress and the oil mill was ready for use at the end of the year.

Research work on the insect pest of coconuts, *Theraptus* sp., continued and is described in detail later in this report.

4. Minor Export Crops

The quantities and values of minor agricultural exports were much less than last year and, since the total value of exports rose from under four million pounds sterling in 1952 to over seven million in 1953, the proportion of this total representing minor cash crops fell very considerably. This is something of a disappointment since so much of the efforts of the Department of Agriculture are directed to the expansion of the minor export crops in an endeavour to spread the burden of the Protectorate's economy over a larger number of products.

Chillies exports fell to 891 cwt., 32 per cent less than last year. The Clove Growers Association maintained their guaranteed buying price of Shs. 70 per 100 lb. throughout the year. Open market prices rose to Shs. 120 at end of the year.

Kapok and fibre products exports both increased but visible tobacco exports fell to less than half the 1952 figure. The Clove Growers Association purchased tobacco on behalf of the Government monopoly in Somalia, but there is no doubt that large quantities are also taken away by dhows.

There was no export of derris root during the year and it is difficult to maintain public interest in this crop in spite of the most remunerative prices which now prevail.

A small consignment of 816 lb. of cacao was exported and obtained a price in London of Shs. 285 per cwt. This price was about Shs. 20 higher than good West African cacao sold at the same time. The buyers reported an undesirable yeasty flavour in part of the consignment due to slight under-fermentation but considered that the drying and subsequent operations had been very satisfactory. It is to be expected that quality will improve when larger quantities of raw cacao are available for fermentation.

Seaweed exports fell somewhat owing to temporary dissatisfaction on the part of buyers over the moisture and extraneous matter contained in this product. There has also been some difficulty in ascertaining which of the several species obtainable in Zanzibar is the most useful to manufacturers who buy the weed. Some eighty-nine tons were exported, valued at £4,626, but at the end of the year, the prospects for expanding this useful industry had greatly improved.

5. Foodcrop Production

The prolonged and abundant rainfall during the early part of the year enabled a good rice crop to be grown. The poor clove crop of 1952–53 stimulated rice-growers to plant a greater acreage than usual and some 13,438 tons of paddy were reaped, about 22 per cent more than the average of the past six years. There was a small increase in the amount of land mechanically cultivated for rice but growers took no advantage of stocks of artificial fertilisers available for sale.

Large areas were planted to cassava in both islands and, owing to favourable weather conditions, the yields obtained were very good. The smaller areas planted to sweet potatoes also yielded well. Crops such as maize, sorghum and pulses which are chiefly grown on soils outside the clove belts in both islands were planted on the usual relatively small scale, and grew well.

The planting of rice and cassava was again encouraged and extended by the issue of compulsory planting orders, by which able-bodied men who have no regular means of support may be compelled to plant food crops for their own personal use. The Protectorate is unable to produce all its own food requirements but it is generally recognised that the increased internal production of foodstuffs which results from the issue of planting orders is an important factor in reducing the cost of living.

In general, locally produced food was plentiful with prices much the same as those of last year. The following table, which shows the quantities and cost of foodstuffs passing through the main market of Zanzibar town, indicates the trend of local production.

	1951	1952	1953
Vegetables, baskets	80,942	102,213	77,695
Average price per basket ...	Shs. 4.51	Shs. 4.33	Shs. 4.53
Fruit, baskets	128,877	94,337	155,570
Average price per basket ...	Shs. 5.23	Shs. 4.84	Shs. 4.38
Staple, starchy foods, baskets ...	159,067	183,393	157,092
Average price per basket ...	Shs. 10.78	Shs. 8.45	Shs. 8.08

6. Animal Husbandry

Importation of animals into the Protectorate compared with previous years are shown in the following table which includes small numbers of cattle imported direct from the mainland into Pemba:—

	1951	1952	1953
Cattle ...	3,904	... 3,463	... 5,208
Goats ...	13,771	... 11,111	... 14,519
Sheep ...	2,370	... 2,100	... 2,501
Donkeys ...	80	... 6	... 17

The following tables show the numbers of animals recorded as having been slaughtered for meat, the figures for rural areas being probably less than the actual numbers:—

Zanzibar Town Abattoir

	Oxen	Cows	Calves	Goats	Sheep	Pigs
Local stock ...	242	159	13	3,163	7	6
Imported stock ...	3,411	-	7	9,522	2,243	-
1953 Total ...	3,653	159	20	12,685	2,250	6
1952 Total ...	2,925	168	63	11,501	2,266	84
1951 Total ...	2,805	139	31	12,126	2,255	211

Other Areas

(Cattle only and figures approximate)

	1951	1952	1953
Pemba rural areas ...	867	1,130	2,294
Pemba townships ...	931	918	1,118
Zanzibar rural areas	524	435	401
Total ...	2,322	2,483	3,813

These figures show that during 1953 there has been a very great increase in the consumption of meat throughout the Protectorate, especially beef. This is partly due of course to the affluence of clove-pickers during a big clove harvest. Pemba is largely self-supporting for meat supplies at present but, like Zanzibar, its dependence on the mainland for its meat supply has increased. It is noteworthy that the old livestock trade with Somalia is now returning to its pre-war level.

In June 1953 a report was received from the veterinary authorities in Dar es Salaam that an outbreak of rinderpest existed at that town. Thanks to their timely notification and their subsequent co-operation and assistance, it was possible to stop the importation of cattle from Dar es Salaam into the Protectorate until the danger of introducing rinderpest had been removed.

There were no major outbreaks of disease in the Protectorate during the year. A mild outbreak of foot-and-mouth disease in Zanzibar resulted in no losses of stock. The Veterinary Officer carried out a large scale test for *Brucella abortus* reactors amongst the town dairy herds and found larger numbers than had been expected.

The treatment of cattle affected with trypanosomiasis at the Veterinary headquarters and by the mobile team was continued using antrycide methyl sulphate. Some 41 per cent of the animals examined by the mobile clinic were found positive and treated. The percentage of positive cases has increased but the number of animals brought for treatment is now much less than in earlier years. Treatment with antrycide has been most effective and the faith of the cattle-owners in this drug has greatly increased in recent years. It is considered that this activity of the veterinary section

has been successful in effecting a decrease in the incidence of trypanosomiasis in the island and that cattle-owners are now becoming much more able to recognise the disease and its dangers and more anxious to take effective steps in its treatment.

Dipping against East Coast Fever was regularly carried out by the commercial dairy-owners and by owners of cattle grazing on government land. But dipping by private owners of small numbers of cattle has markedly decreased in both islands. It is thought, however, that the consequences of this disease do not, on the whole, justify the enforcement of compulsory dipping, a measure which has proved so very unpopular in the past.

Organised local marketing of hides and skins still remains in abeyance but exporters market their produce through agents in Dar es Salaam to their own satisfaction. The Government drying sheds in Zanzibar and Pemba continued to be operated by the department and the following numbers of suspension-dried hides and skins were prepared during the year:—

	Hides	Skins
Zanzibar, from abattoir	3,917	14,890
Zanzibar from rural areas	432	3,217
Wete, Pemba	1,015	1,082
Chake Chake, Pemba	921	553

Konde shed was in the hands of local butchers and records are not available.

The total value of hides and skins exported from the Protectorate was £10,950, almost exactly the same as in 1952, although the actual numbers were greater.

SECTION B. THE WORK OF THE DEPARTMENT OF AGRICULTURE

1. Staff

The Director, Mr. A. K. Briant, was in the Protectorate throughout the year and was assisted by the Senior Agricultural Officer, Mr. G. E. Tidbury. Mr. G. W. Anderson acted as Senior Agricultural Officer during Mr. Tidbury's absence on leave from March to October and was transferred to Uganda in November.

In the Zanzibar districts, Mr. D. W. Winter in the north and Mr. O. de Manbey in the south were on duty throughout the year. Mr. G. D. Wilkinson was in charge of the Pemba district until December, the district being then taken over by Mr. R. K. Tremlett on transfer from Uganda. Mr. Barrett's contract expired in September and the Kizimbani Experimental Station was then taken over by Mr. K. A. Bowden who had been on vacation leave during the first part of the year.

The Veterinary Officer, Mr. Ahmed Rashid, and the Assistant Agricultural Officer in charge of the Tsetse and Trypanosomiasis Survey, Mr. Othman Shariff, were on duty throughout the year.

The Government Plantations remained in the charge of Mr. A. Khamis. The post of Government Chemist remained vacant.

The Entomologist, Dr. F. L. Vanderplank, was on duty throughout the year and his Field Assistant, Mr. L. J. Stevens, was appointed on 1st September.

Mr. T. A. Couppis, Forest Officer, and his Assistant, Mr. A. A. Wadud, were both on duty throughout the year, as were Mr. I. G. C. Squire, Field Supervisor in charge of the Fruit Scheme, and Mr. K. F. King, Fisheries Officer. The Shipwright, Mr. G. Slater, completed his contract and returned to the United Kingdom on 24th October.

Mr. L. Paul, Head Clerk, remained in charge of the Head Office clerical staff throughout the year.

Extension work in the districts and most of the development schemes were thus relatively undisturbed by staff movements.

2. The Development Programme

The majority of the activities of the Department are now either part of the Ten-Year Development Programme or very closely associated with it.

Three new schemes were approved by the Secretary of State during 1953. These were the Experimental Control of Clove Diseases, the Rice Cultivation Scheme and the Experimental Forest Planting Scheme.

The first is intended to extend the work of the Clove Research Scheme by the establishment of long-term experiments, in Pemba, to find means of arresting the spread of sudden-death disease and, in Zanzibar, to seek ways of successfully re-establishing cloves on land previously infected with the disease. The officer in charge of this programme of experiments is Mr. T. E. C. Robins and activities had only just commenced before the year closed.

The Rice Cultivation Scheme is intended to increase the cultivation of rice, especially in times when the exigencies of the clove crop or unseasonable weather interfere with preparation of the land by hand, by the provision of tractors and implements of mechanical cultivation for hire. The scheme is thus an extension of the earlier scheme Experiments with Agricultural Tractors. It is intended to use the tractors for the cultivation of coconuts and other permanent crops when they are not in use preparing land for the rice crop.

The Experimental Forest Planting Scheme is an extension and continuation of the existing scheme Development of Forest Resources. The new scheme provides for the planting of large areas of hitherto unused shallow soil overlying partly outcropping coral, the so-called *uwanda*. Provision is also made for the protection, on an experimental scale, of naturally regenerating forest on coral karst land where shifting cultivation is practised, and also for the exploitation and re-afforestation of the Ngezi forest in Pemba.

The other major change in the Development Programme followed a decision not to proceed with the Pineapple Canning Scheme. This was decided after a visit had been paid to pineapple-canning projects on the mainland which disclosed greater difficulties and drawbacks to the scheme than had been foreseen.

The existing schemes continued on the same lines as in earlier years, their progress forming the major subject of this report. The various development schemes, original and secondary, are now such that it is more convenient to consider the year's progress under subject heads rather than under the separate schemes.

3. Crop Husbandry

Cassava.—A variety trial of Amani hybrid cassavas (resulting from back crosses between cassava and *M. glaziovii*, *M. dichotoma* and tree cassava), which had been selected last year, was reaped. The Department's standard local variety, *Msitu*, yielded at the rate of 5.7 tons per acre. Two hybrid varieties yielded significantly more heavily than this. These were 4697/4 and 46106/27 at 9.2 and 8.8 tons per acre respectively: both are 3rd back crosses cassava × *M. glaziovii*. Unfortunately both are bitter varieties and it appears unlikely that this batch of Amani hybrids will provide a variety much superior to the local best. It is noteworthy also that, during the three years these varieties have been grown at Kizimbani, their resistance to streak and mosaic diseases as well as their yields have steadily decreased. The trial was replanted for a further year and a new selection of hybrids from Amani was planted in the nursery for multiplication and observation.

Chillies.—Some 367,000 free chillie seedlings were distributed to growers from nurseries maintained by the Department with funds provided by the Clove Growers Association.

Citrus.—This was the first year for the distribution of budded planting material under the Development of the Fruit Industry Scheme. This scheme provides for the production of 84,000 citrus plants for free distribution to Zanzibar land-owners and for their maintenance during their early years by payments of a bonus for good husbandry.

The scheme programmes the issue of planting material over three years and this year 45 per cent of the full number was distributed and 322 acres planted up. The issue consisted of 9,127 oranges, 2,310 grapefruit, 25,827 limes and 710 mandarins, all budded on rough lemon stocks. On the whole, planting out was very well done by the participants in the scheme and all areas are being regularly inspected so that bonus payments can be made. Nursery work carried out during the year involved budding for the 1954 issue and the raising of stocks for the 1955 issue. A small number of mangoes are also being budded for issue under the scheme.

The demonstration plots at Dole on twenty acres of Government land were maintained and the young trees have grown remarkably well, especially the budded limes. Late in the year an outbreak of a disease of limes believed to be "wither-tip" caused damage at Dole both to these plots and, more seriously, to the young lime plants in the budding nursery. It was also observed to a lesser extent in other areas. This disease, which is caused by the fungus *Glœosporium limetticolum*, had not been previously recorded in or near Zanzibar and thus constitutes a serious threat to the projected lime-oil industry. On the other hand, it is likely that the fungus will only be active under hot damp conditions and may be less suited to the dry conditions of the *uwanda* and *kinongo* soil areas where limes grow well. Although the potential danger of wither-tip is fully appreciated, it is intended to proceed with the scheme, and the possibility of introducing the resistant T.1 lime from Trinidad is being considered.

In the citrus block at Kizimbani Experiment Station a very heavy fall of almost ripe oranges occurred again this year. Some 183,000 fruit were lost in this way from 323 trees. This fruit fall has now occurred for several seasons and a possible cause is thought to be water-logging. To test this theory, trenches three feet deep have been dug to drain part of the area.

Cloves.—The Clove Research Scheme, which since 1946 has been mainly devoted to the problems of clove disease, finally closed in March. Although the fungus *Valsa eugeniæ* is undoubtedly a parasite on the roots and branches of clove trees, and appears to be present in all trees which have recently been killed by sudden-death, it is often prevalent in areas where there is no evidence of sudden-death. A programme of investigations to be carried out by the Department of Agriculture has however been framed on the assumption that the cause of the disease is an organism parasitic on the roots.

It seems certain however that *Valsa* is implicated in the condition known as "slow-decline" of clove saplings. In this connection it has been of particular interest to observe that numbers of sapling cloves growing in cacao areas at Mlangoni and Selem have greatly benefitted from the

protection provided for the cacao in the form of shade trees of *Cassia siamea* and windbreaks. The cloves have shown exceptional vegetative vigour and their leafy canopies have been restored. There is a distinct possibility, even if slow decline is caused by infection by *Valsa*, that the degree of parasitism of the fungus and the extent to which the clove trees are affected are strongly influenced by, and may be dependent on, the existence of soil and environmental conditions adverse to the growth of clove trees. Experiments to throw further light on this matter are to be laid down at Kizimbani.

The nature of clove die-back disease and its control by pruning and the protection of exposed tissues have continued to be demonstrated on private plantations in Pemba and on Government land in Zanzibar. The technique has been improved with experience and a fair number of landowners are taking an interest in this work. Members of the field staff of the Department have been engaged in continual publicity work on the subject of die-back and a noteworthy result of these efforts was achieved this year when the bumper clove crop was reaped with a minimum of severe branch-breaking, particularly in Pemba.

Nearly a quarter of a million selected clove seedlings were distributed to growers this year from nurseries established and maintained by the Department. This work was financed by funds received from various sources including a grant by the Clove Growers Association.

Cacao.—All the cacao gathered this year on Government-owned and privately owned plantations was bulked together and fermented in the Government's new fermentary at Selem. The year's production, amounting to 816 lb. of dry cacao was consigned to the London market, where it was sold for Shs. 285 per cwt. This fermentary provides excellent facilities for processing very much larger quantities of cacao than are likely to be produced during the next five years.

The cacao areas on Government land have vastly improved as the result of the protection which has been provided by planting *Cassia siamea* as shade trees and cinnamon hedges as windbreaks. These areas were extended again this year and a few local planters also continued to plant up small blocks of cacao.

Coconuts.—At the end of 1952, the responsibility for coconut pest research passed from the Director of Clove Research to the Department of Agriculture.

The Entomologist has been mainly engaged in testing various formulations of insecticides and methods of application with a view to the control of *Theraptus* sp., the chief cause of premature nut fall and the gummy lesions and distortion of mature nuts.

Although investigations of other formulations continue, the most useful insecticide so far tested is 10 DRDK consisting of 10 per cent DDT and 1 per cent resin in a mixture of dieselene and kerosene. This has been applied in various patterns to a large number of field experiments and also by aerial spraying to larger areas.

Aerial-spraying has been carried out in two separate areas with similar results. A very rapid and almost complete reduction in the numbers of *Theraptus* is observed after spraying the area twice but the numbers of the pest build up very fast and temporarily reach a higher peak than the normal population. To what extent this is due to reinvasion from outside the sprayed area or to the multiplication of survivors is unknown. Probably both factors are operative. It is now considered that aerial-spraying should await more exact knowledge of the various insecticides and their effects which can be obtained more cheaply and effectively by ground spraying.

Hand-spraying is subject to certain serious drawbacks, the chief amongst which is the need for constant supervision. It is also expensive and the physical difficulties of reaching or climbing into the crowns of palms bearing large numbers of fairly mature nuts makes the further spraying of young inflorescences almost impossible. For the present no further hand-spraying experiments are envisaged.

Mist spraying from the ground appears to be the most suitable method of application but the machine used throughout the year has been found to be incapable of depositing sufficient spray into the crowns of palms more than about 30–35 feet high. It is thought that a mist-sprayer capable of directing a much greater volume of air into the trees will be needed before successful ground spraying can be achieved.

In certain other experiments the treatments have been aimed, not at direct control of *Theraptus*, but at an indirect control through the encouragement of the predator *Œcophylla* ants which in many areas have been driven out by *Anoplolepis* and *Pheidole* ants.

It is as yet too early to have achieved a consistently higher yield of coconuts in any experiment as a result of *Theraptus* control but estimations of yield based on counts of immature nuts do indicate the probable effectiveness of certain treatments.

A committee composed of entomologists from Kenya and Tanganyika, both territories in which *Theraptus* damage is widespread, met under the chairmanship of the Director during the year to review the progress of this work.

The Entomologist was also engaged in investigations into the control of a newly imported ant, *Anoplolepis custodiens*, which is spreading rapidly in areas around Zanzibar town and causing alarm. Whether this pest is a potential danger to agriculture is not known, but its aggressive habits cause much discomfort to persons, poultry and stock in places where it has become established. It appears to be controlled by Dieldrex but the application of this insecticide in broken country and amongst low bush and closely planted ground crops presents a serious problem.

Coffee.—Some 7,423 Liberica coffee seedlings were distributed this year. Some of these were distributed free as part of Tree-Planting Day activities.

The Nganda strain of Robusta coffee introduced from Uganda in 1951 has become established but its growth has not been satisfactory although rather better in Pemba than in Zanzibar.

Cotton.—A variety and fertiliser trial conducted at Hanyegwa Mchana was not a success. There has been no further extension of work with cotton.

Derris.—Although no shipments of derris root have been made this year, investigations have been continued into the needs of this crop at Kizimbani and elsewhere. Proprietory rooting agents, particularly Seradix A and Seradix B3, have given very good results in direct establishment of fresh unrooted cuttings in the field, better even than the planting of rooted cuttings from the nursery. Yields have been very good. Yields of dry root of over 1,000 lb. per acre have been reaped from relatively poor soils and much higher yields have been recorded from small plots grown under more favourable conditions. Continual efforts are made by the field staff to popularise this crop with local cultivators but the long period (2½ years) needed for derris to mature tends to make it unpopular.

Rice.—The rice beetle, *Heteronychus andersoni*, again appeared but caused little damage. A trial to observe the effect of various proprietory seed dressings indicated that none of the dressings tested was effective in preserving the young seedlings from beetle attack.

Selected strains of local rices were maintained at the experiment stations. At Kibonde Mzungu twenty acres of irrigable land were leased to rice-growers.

Sweet Potatoes.—Two variety trials of sweet potato varieties imported from Hong Kong were undertaken. The results were not impressive, the department's standard heavy yielding variety, B.44, easily out-yielding the imported varieties. Nor were any of the new varieties as palatable as the department's variety Caroline Lea which is very sweet and, being yellow-fleshed, rich in vitamin A.

Yams.—Demonstration plots were maintained in the Makunduchi area to show the value of farmyard manure on this crop. Variety Bottleneck Lisbon when manured yielded over seven times as heavily as the unmanured plots.

Ylang-ylang.—Interest is still maintained in this crop which is growing with remarkable vigour at Kizimbani. The block of trees planted in 1949 yielded 295 lb. of flowers from 118 trees, the peak yield being in May.

4. Mechanical Cultivation

Two Ferguson and one Fordson tractors, which were purchased under the Experiments with Agricultural Tractors Scheme, have been hired out to rice cultivators in Zanzibar and Pemba and their work has been very popular. At the end of the year however it was clear that the hire charges (Shs. 48.40 per acre for ploughing and Shs. 12.10 for harrowing) were insufficient to cover depreciation as well as the cost of running these machines.

The chief reasons for this are as follows:—

(i) Rice cultivators all wish their land to be ploughed in December and January and are rather unwilling to commence their cultivations earlier. This is partly due to the exigencies of the clove crop which keep rice growers away from their fields until January. Furthermore, any fields that are ploughed prior to the November rains soon become thick with weeds. This latter problem may be solved by ploughing in August and September and planting a catch crop such as cowpeas or gram which will pay for a deep harrowing in January to prepare the land for the rice.

(ii) There is as yet no clear demand for the mechanical cultivation of permanent crops in the off season and the tractors tend to be idle for several months. This is partly due to the lack of an implement capable of dealing with heavy weed growth in coconuts. It is hoped, in early 1954, to test certain implements such as the bush-and-bog type harrow and a bush cutter consisting of knives set on a heavy roller. A Krause one-way disc harrow has given excellent results in permanent crops where weed growth was not too heavy.

(iii) Spare parts are difficult to obtain in Zanzibar and need to be ordered from the mainland. This difficulty should lessen as more tractors are in use in the Protectorate.

(iv) The plots to be ploughed are usually small in size, often less than half an acre, irregularly shaped and scattered. Improvement could be effected by amalgamating small plots into larger units, but this must await an increase in popularity and demand for tractor ploughing. Amalgamation could however, be encouraged by charging lower rates for cultivating larger fields.

There is no doubt that mechanical cultivation will play an increasingly large part in local agriculture in the future and that most land owners are anxious to see their labour problems solved in this way. A new scheme for rice cultivation on an enlarged scale was approved during the year and will come into operation next year.

5. Stock Husbandry

Kizimbani Stock Farm

Selection and breeding for milk production continued at the Kizimbani Stock Farm where cattle numbers averaged 218. There were no changes in management and the general health of the herd was very good. There was a total production of 143,372 lb. of milk with an average butter fat content of 5.2 per cent. Some 3,117 lb. of ghee were prepared and sold on the station.

The average daily milk index (pounds of milk per cow in milk per day) was 8.1 lb., the highest figure so far achieved. The average output of milk per cow per annum, a figure which includes all the cows in the herd whether in milk or not, rose to 2,077 lb. and was also higher than in any previous year. The figure for the average of completed lactations fell somewhat owing to the inclusion of several very poor first lactations

this year. On the whole the year has seen still further improvement in the standard of this herd which is now much superior to the average local cattle and approaches the performance of grade animals in the commercial dairy herds.

So far very little advantage has been taken by rural cattle owners of the few Kizimbani bulls sent out for service last year. A larger number of bulls is now available and it is hoped to make this service more popular next year by publicity and other means.

Pasture Improvement

In the grazing trial at Kizimbani, swards of various grasses are being grazed systematically and records kept of their productivity. Grazing records are as yet too few for useful comparison but the following notes on the behaviour of these grasses are of interest:—

Digitaria sp., a local selection, is easy to establish from cuttings, grows well and recovers well from grazing. It is most palatable and so far represents the best grass we have for a fairly short ley. It is unlikely to cope successfully with weeds and may only last two or three years.

Paspalum notatum from Uganda is much more difficult to establish and does not appear to be very palatable. But its growth is very vigorous and it competes well with weeds. It is probable that a well established *Paspalum* sward is permanent.

Stenotaphrum dimidiatum, Pemba grass, is easy to establish, most vigorous and persistent. It spreads fast, smothers weeds and can become a nuisance. Stock find it fairly palatable except when growing rankly. It is the grass used throughout all the non-experimental paddocks of the stock farm.

Chloris gayana, from Kenya, has proved most difficult to establish and is likely to be quite unsuitable for this reason.

Cenchrus ciliaris from Kenya, is also difficult to establish and its habit of growth makes it unsuitable as a pasture grass. Other strains of *Cenchrus* have been collected locally and may prove more useful.

Cattle Industry in the Uwanda Areas

The beef herd, which is kept under ranching conditions on the open *uwanda* plain at Hanyegwa Mchana, was maintained throughout the year. This herd now numbers 272 head and there were 45 calves born during the year. Twenty-two animals were sold for slaughter.

The health of the herd has not been entirely satisfactory. Twenty-seven animals died from various causes although the disease which was thought likely to prove the gravest difficulty in the project, namely trypanosomiasis, accounted for only three deaths.

In spite of an excellent rainfall of 83.62 inches received during the year and correspondingly good grazing conditions, the condition of the herd fell off towards the end of the year. This loss of condition became

quite serious and is tentatively attributed to a mineral deficiency as yet undiagnosed. Experiments and observations are in progress in an endeavour to learn more about this possible deficiency.

Trypanosomiasis was most serious in March, April, May and September, the wet and cloudy months when flies range further from the bush. But only 2.2 per cent of the herd were infected and the results of treatment with Antrycide were excellent.

The wind-pump continued to provide ample supplies of excellent water and grazing control with an electric fence was fully satisfactory. But successful management of large numbers of stock on the sward of *Heteropogon contortus*—a grass most difficult to manage—appears more and more to depend on close personal and daily supervision by responsible staff.

During the year approval was given for a similar project to the above which will be undertaken on a similar *uwanda* plain near Tunguu.

Disease Control

At the Veterinary headquarters and at small rural clinics in Pemba and Zanzibar, regular treatment of animal diseases and ailments was provided by the Veterinary Officer and his staff. Altogether some 3,357 treatments were given in Zanzibar including 338 given by the mobile clinic for trypanosomiasis, which makes regular visits to all rural areas in Zanzibar. Some 2,505 cases of animal illness were also treated in Pemba by veterinary staff.

For the control of East Coast Fever the Department maintained or supervised eight dips in Zanzibar and three in Pemba. Attendance was poor except for the commercial herds of grade cattle and smaller herds kept on government land. A spraying unit has been sent to Makunduchi.

Tsetse and Trypanosomiasis Survey

The one-year survey of twenty square miles of typical clove and coconut plantation country in the Mwera area was completed during the year. This survey of the incidence of tsetse flies and trypanosomiasis was undertaken by an Assistant Agricultural Officer in close liaison with officers of the East African Tsetse and Trypanosomiasis Research and Reclamation organisation who afforded much helpful advice. The continuation is in a southerly direction and will include the area of *uwanda* grassland near Tungu which has been selected for the second ranching scheme for beef cattle (*vide supra*).

Broadly speaking, this survey has shown that, apart from a few small areas of dense vegetation near the Mwera river, the tsetse fly breeds in thickets situated on the coral *uwanda* to the east of the area and invades the plantation areas as conditions permit. If therefore, a *cordon sanitaire* of open stretches of country can be maintained between the coral bush areas on the eastern side of the island and the plantation areas of the west, there is a reasonably good chance of keeping the incidence of trypanosomiasis very low in the plantation areas. Eradication of fly and disease in the eastern bush is not considered practicable

as the bush is dense and covers a vast area in which wild fauna act as a reservoir of the trypanosome. During the survey some 141 acres of bush were cleared at a cost of Shs. 36.00 per acre, and it may be necessary to clear these areas afresh from time to time

Regular examinations of the cattle of the area were made by means of fresh blood smears and these have shown how the progressive clearing of breeding places, combined with the treatment of infected animals, reduces the incidence of the disease. The results for the five divisions which make up the surveyed area are as follows:—

Percentage infection with trypanosomiasis

	First Examination July/Dec. 1952	*Second Examination Dec. 1952/ Mar. 1953*	*Third Examination April/Aug. 1953*	*Fourth Examination Nov. 1953/ Jan. 1954*
Kianga ...	4.8	2.3	1.2	0.7
Kimara ...	5.1	4.1	4.5	3,8
Koani ...	8.3	39.4	6.3	5.9
Ubago ...	28.2	14.3	9.2	3.0
Machui ...	—	7.7	4.8	6.9
Whole area ...	6.7	5.7	3.3	2.4

Some variability in the numbers is due to difficulties of ensuring a full muster of cattle when examinations are carried out and also to stock movements. But there is a clear indication that an effective reduction in trypanosomiasis can be achieved by partial clearing and regular disease treatment in this way.

6. Forestry

The Forest Reserves Decree (1950) was first brought into operation early in the year by the publication of Government's intention to declare certain areas as Forest Reserves. The more important of these are the Ngezi Forest in Pemba and the Kichwele-Pangeni area now being afforested by Prison labour.

Migombani gardens produced some 16,000 seedlings of forest trees, mainly casuarinas and gums, and these together with planting material from other nurseries were used by prison labour to extend the forest area at Walezo-Chumbuni and at Kichwele-Pangeni by 11,000 and 25,000 plants respectively. Some 17,000 seedlings were used to plant up gaps at Jendele. On the whole, the growth of trees in the two forests has been good but appears to depend almost entirely on the amount of cultivation which can be given to the seedlings in the early years.

The Forest Officer completed a survey of the Masingini ridge, the catchment area on which the Zanzibar town water supplies depend and which is badly eroded.

A scheme for the purchase and re-afforestation of land within this area has been approved but shortage of trained staff is likely to delay the commencement of this much needed task. Some re-afforestation has, however, already been undertaken within the area on land already belonging to the Government.

In the Jozani Forest in Zanzibar, the planting of about thirty-four acres with *Calophyllum inophyllum* was ruined by extensive flooding after the *masika* rains. Replanting commenced when the waters subsided and a small nursery has now been established in this forest. It is believed that larger seedlings would survive flooding.

In Pemba, the Ngezi Forest has been surveyed and a plan prepared for its exploitation and systematic re-afforestation. The *mvule*, *Chlorophora excelsa*, appears to do well in this forest to which it is probably indigenous. But most of the existing tree species, mainly *Antiaris toxicaria* and *Odylandia zimmermanni*, produce very inferior timber suitable only for cheap box construction.

The Forest Adviser to the Secretary of State visited Zanzibar during the year and advised on projected forestry developments. He was impressed by the growth of *Chlorophora* in Zanzibar and Pemba. Initial plantings of this tree have already been made at Ngezi and are making good growth.

During the year a new forestry scheme to augment the present activities was approved by the Secretary of State. The grant of £28,400 provides for the afforestation of 1,000 acres of *uwanda* land, the planting of 100 acres of experimental forest blocks on the outcropping coral karst land, and the establishment of an experimental area of 2,000 acres of outcropping coral in which the traditional bush fallow and shifting cultivation will be studied and controlled in order to achieve optimum productivity. The importance of this latter experiment lies in the fact that too frequent felling and burning of the coral area bush for food crop cultivation and also for lime-burning impedes natural regeneration and limits the value of the necessary resting period. This results in the entry of grass with annual fires which cause a decline from dense bush to the savannah-like *uwanda* which is useless to the people of these areas.

7. Fisheries

The 68-foot motor fishing vessel *Annajah* has been regularly at sea during the year under the command of the Fisheries Officer. Various methods of fishing have been tried for their suitability under Zanzibar conditions. Experience has shown that netting, set lining and trolling are the most suitable.

The mensab net of Arab origin, gill nets and trammel nets are all useful and their use should be extended but the Fisheries Officer is convinced that there is no commercial future for beam and otter trawls owing to the frequency and extent of coral outcrops on the sea bottom.

Set lining has been particularly successful in shark fishing and economically is a very promising method for a small powered craft.

Other methods with line fishing includes Japanese float-line fishing for tunny, and deep-sea lining with reels and wire lines. Both these latter methods need further investigation.

Trolling is a most valuable method, although success depends largely on knowledge of the seasonal movements of pelagic fish. Catches of over 1,000 lb. per day are feasible if suitable conditions are met with.

A second fisheries vessel, the *Forerunner*, commenced operations in November. Her task is one of demonstration as she represents the ideal powered craft for use by local fishermen. The *Forerunner* is forty feet in length, 12 feet six inches in beam and 3 feet six inches in draft. She is powered by a 30-horse power Diesel engine which also drives a small capstan on the deck. She carries a suit of sails, has an economic speed of six knots and can remain at sea for a week. Her crew consists of five Africans, one of whom can manage the engine. She costs £1,300.

The catches of both fishing boats have been preserved at the fish-curing station built last year at Mtoni. The excellent quality of dried fish produced here has caused much local comment. It is sold locally at the rate of £100 per ton.

The year has seen a noteworthy step forward in the Fisheries Development Scheme which is now going ahead as well as one could wish.

8. Education

There was only one pupil-in-training at Kizimbani during the year.

A small school farm, to be run by the boys of the Seyyid Khalifa Rural Middle School, was embarked upon at Kizimbani. Progress, however, during the year has been rather slow.

District staff regularly visited all school gardens and advised on their management. Lectures to schools were given in Pemba on clove die-back and other subjects.

A successful Agricultural Show was held at the Kizimbani Experiment Station in September.

9. Distribution of Planting Material

A list of the planting material sold or distributed free to cultivators is shown as an appendix. Clove seedlings were raised in nurseries financed from grants made by the Clove Growers Association and from Colonial Development and Welfare funds as well as from Protectorate funds. The Clove Growers Association also provided funds to raise free planting material of cacao, derris and chillies. Citrus and mango plants distributed under the Fruit Scheme are also included.

10. Government Plantations

The Government Plantations section of the Department, which endeavours to run the plantations under its charge on commercial lines, showed the very respectable net profit of £12,013 on the year's workings. This figure includes the value of 93,650 lb. of cloves deposited with the Clove Growers Association and valued at Shs. 208/50 per cental, the market price at the end of the year (= £9,763).

Much of the expenditure of the Plantations section was not immediately remunerative, such as the cost of establishing cacao, forest trees, and derris. Of the total expenditure on the maintenance of the clove areas, 43.3 per cent was devoted to die-back disease control by pruning. This treatment, for 2,500 trees, averaged Shs. 2.69 per tree and was confined to the younger age classes.

The clove harvest was a very large one and 93,650 lb. out of the total of 104,539 lb. harvested were deposited with the Association so as to assist in the carry over of cloves into the next season when the crop will be poor. The following table compares this season's crop with previous ones:—

Season	*Green cloves* lb.	*Dry cloves* lb.	*Dry stems* lb.	*Average price cloves per 100 lb.* Shs.
1953–1954 (up to 31st December, 1953) ...	336,078	104,539	32,903	437.90
1952–1953	103,093	35,082	11,010	763.31
1951–1952	11,126	3,502	1,049	398.29
1950–1951	180,944	59,572	15,923	145.40

The coconut harvest, which is calculated by the calendar year, was much hindered by shortage of labour due to the demands of the clove harvest. In several areas third and fourth gatherings were taken as one. Wages for coconut harvesters and copra-makers all rose during the year.

The following table shows the year's coconut harvest compared with previous years:—

Year	*Nuts Gathered*	*Copra made tons*	*Nuts per ton of copra*	*Average Copra Price Shs. per 100 lb.*
1953 ...	2,490,490	270	7,282	57.73
1952 ...	2,595,576	339	6,542	36.31
1951 ...	1,846,194	239	6,725	59.65
1950 ...	2,815,289	341	7,165	47.08

Prices were better than last year but nuts were smaller on the average and the out-turn of copra rather low.

The Plantation section statement of revenue and expenditure for the year is shown as Appendix I to this report.

11. Produce Inspection

Clove and copra exports were considerable this year but the bulk of the work of this section was occasioned by the large clove harvest and inspections under the Adulteration of Produce Decree. The high quality of exported copra was maintained by rigid inspection prior to export and by initial inspections in the copra market prior to purchase by exporters.

Inspection of coconut oil prior to export is made in conjunction with the chemical laboratory, where free fatty acids, moisture and extraneous matter are determined. The Laboratory also carries out the inspection of clove oil and seaweed. The latter produce is inspected at the request of exporters, as it is not included under the Agricultural Produce Export Decree.

Some forty-three tons of chillies were also inspected and graded prior to export.

Inspections under the Adulteration of Produce Decree are shown in the following table. Pemba produce is also given a preliminary inspection at Pemba ports and produce not conforming to the requisite standards has to be reconditioned before shipment to Zanzibar is allowed.

Produce and Origin	*Delivered (bags)*	*Passed (bags)*	*Failed for Excessive moisture (bags)*	*Failed for Extraneous matter (bags)*	*Percentage of failures*
Zanzibar cloves	47,228	41,121	5,599	508	13
Pemba cloves	195,112	182,182	10,068	2,862	7
Total cloves ...	242,340	223,303	15,667	3,370	8
Zanzibar clove stems ...	13,396	13,351	27	18	–
Pemba clove stems* ...	29,607	27,588		2,019	7
Total clove stems ...	43,003	40,939		2,064	5
Zanzibar copra	153,821	146,269	7,553	–	5
Pemba copra	61,240	60,995	–	245	–
Total copra ...	215,061	207,263	7,553	245	3.6%

*Not re-examined in Zanzibar.

12. Chemical Laboratory

For the fourth year no Government Chemist has been on the staff, and laboratory work was therefore restricted to routine analysis and such other work as could be supervised by the Director. There was a very large increase in the number of analyses undertaken during the year. By far the largest number of samples are part of the produce inspection services and comprise coconut oil and clove oil. Cattle-dip fluids for testing the arsenic content, milk samples taken by public health authorities, water samples from the Public Works Department and a large number of assorted samples sent for analysis by the police make up most of the remainder.

Analyses conducted for private firms usually comprise copra cake, coconut oil, and an assortment of articles on which insurance claims for damage in transit are made.

13. Principal Agricultural Legislation

The following is a list of the more important agricultural legislation promulgated during the year:—

		Date
Decree No. 7 ...	A Decree to amend the Animals Disease Decree ... This amendment includes the spraying of cattle in legislation already in force for cattle dipping.	7.3.53
Decree No. 14 ...	A Decree to amend the Clove Growers Association Decree This amendment enables the Association more effectively to assist agricultural co-operative societies.	25.4.53

		Date
Decree No. 22 ...	A Decree to Amend the Customs Tariff Decree ... ... This amendment imposes a duty on exported coconuts and amends the section relating to the assessment of duty on coconut products.	11.7.53
Decree No. 23 ...	A Decree further to Amend the Customs Tariff Decree... This amendment provides for a revised method of assessing the values of cloves, mother of cloves and clove-stems for the purpose of calculating the export duties.	2.12.53
Decree No. 25 ...	A Decree to Amend the Prevention of Cruelty to Animals Decree. This amendment gives powers to order the killing, by humane methods, of animals which are in distress through being too old or in an incurable condition.	12.12.53
Decree No. 26 ...	A Decree to Amend the Land Alienation Decree ... This amendment mainly provides penal sanctions for contravention of certain provisions of the decree.	12.12.53
Government Notice No. 18.	Regulations under the Animals Diseases Decree, 1948 ... The Animal Diseases (Amendment) Regulations, 1953, lays down fees for the examination and treatment of animals.	20.1.53
Government Notice No. 56.	Regulations under the Defence (Land Requisition and Personal Service) Regulations, 1943. The Defence (Land Requisition and Personal Service) (Planting of Cassava) Order, 1953. Provides for the compulsory planting of cassava.	9.4.53
Government Notice Nos. 65, 66, 67, 68 and 69.	Regulations under the Forest Reserves Decree, 1950 ... Walezo Chumbuni Forest Reserve, Pangeni Kwa Wakoma Forest Reserve, Ngezi Forest Reserve, Pangeni Forest Reserve, Kichwele Forest Reserve. Specifies areas which it is proposed to constitute as forest reserves.	20.4.53
Government Notice No. 96.	Regulations under the Plant Protection Decree, 1937 ... The Plant Protection (Clove-trees) Rules, 1953. Prohibits the breaking and cutting from branches of clove trees lengths greater than 18 inches, and also the tethering of animals in a manner likely to cause damage to clove trees.	9.6.53
Government Notice No. 129.	Regulations under the Customs Management Decree ... The Customs Management (Prohibition of Clove Imports) Order, 1953. Prohibits the importation into the Protectorate of cloves, mother of cloves, clove stems and clove oil.	14.7.53
Government Notice No. 173.	Regulations under the Plant Protection Decree, 1937 ... The Plant Protection (Declaration of Pest) Order, 1953. Declares *Anoplolepis custodiens* to be a pest.	3.11.53
Government Notice No. 204 and 205.	Regulations under the Defence (Land Requisition and Personal Service) Regulations, 1943. The Defence (Land Requisitions and Personal Service) (Rice Planting) Order, 1953. Provides for the compulsory planting of rice.	17.12.53

A. K. BRIANT,
Director of Agriculture

8th May, 1954

Appendix I

STATEMENT OF REVENUE AND EXPENDITURE OF THE GOVERNMENT PLANTATIONS

Revenue to Nearest £.

	Kidichi	*Selem*	*Mtoni*	*Chukwani*	*Jendele*	*Total*
	£	£	£	£	£	£
Cloves and stems	4,554	1,478	60	—	18	6,111
Copra	9,422	1,881	3,750	1,898	—	16,950
Coconuts	981	239	547	187	—	1,960
Coconut crops	—	23	191	93	45	353
Miscellaneous	59	136	130	25	11	361
Leased plantations	—	60	—	—	—	60
Hire of lorry	8	2	2	1	—	14
Rent of quarters	39	7	6	7	—	59
Total ...	15,070	3,826	4,686	2,211	74	25,867
Deduct value of produce brought forward	1,649	97	722	293	—	2,760
	13,421	3,729	3,964	1,918	74	23,107
Add value of produce carried forward	8,924	1,452	534	331	532	11,773
Total ...	£22,345	5,181	4,498	2,249	606	34,880

Expenditure to nearest £.

Personal Emoluments						
Headquarters staff	639	213	106	106	—	1,065
Field staff	971	297	265	113	—	1,646
Total ...	1,610	509	372	220	—	2,711
Other Charges						
Travelling and transport	108	47	36	26	—	215
Materials and tools	119	30	11	7	24	192
Labour	10,343	2,860	2,005	2,007	379	17,595
Repairs to buildings	216	119	176	30	—	541
Fuel and maintenance of vehicles	152	114	69	38	8	381
Cost of living allowance	724	200	140	140	27	1,231
Total ...	13,272	3,880	2,810	2,468	438	22,867
Profit	9,073	1,301	1,688	—	169	12,231
Loss	—	—	—	219	—	219
					Total net profit ...	£12,013

Appendix II

DISTRIBUTION OF PLANTING MATERIAL

Planting materials of food crops are usually distributed free, plants of permanent economic crops are normally sold.

Avocado pear, grafted	...	Nos.	13
,, ,, seedlings	...	,,	25
Bamboo, cuttings	...	,,	100
Banana, suckers	...	,,	940
Beans, haricot	...	lb.	2
Breadfruit, suckers	...	nos.	70
Cassava, cuttings	...	,,	110,500
Chillie, seedlings	...	,,	367,489
Clove, seedlings	...	,,	243,199
Cacao, seedlings	...	,,	10,406
Coffee, seedlings	...	,,	3,155
Coffee seed	...	lb.	63
Cow peas	...	,,	2
Custard apple, seedlings	...	nos.	3
Derris, cuttings	...	,,	20,750
Durian, seedlings	...	,,	75
Eugenia aquea, seedlings	...	,,	25
E. jambos, seedlings	...	,,	30
E. javanica, seedlings	...	,,	25
Eugenia malaccensis, seedlings	...	,,	11
Gram, green	...	lb.	22
Grapefruit, budded	...	nos.	2,330
Groundnuts	...	lb.	5
Guava, Chinese, seedlings	...	nos.	19
Jack-fruit, seedlings	...	,,	250
Kapok, seedlings	...	,,	2,800
Kudzu, tropical seed	...	lb.	10
Lime, budded	...	nos.	25,827

DISTRIBUTION OF PLANTING MATERIAL — *(Contd.)*

Lime, seedlings	...	nos.	840
Litchi, marcotts	...	,,	53
Maize	...	lb.	83
Mandarins, budded	...	nos.	765
Mango, budded	...	,,	130
Mango, seedlings	...	,,	23
Nutmeg, seedlings	...	,,	54
Oranges, budded	...	,,	9,540
Pineapple, suckers	...	,,	5,000
Pepper, cuttings	...	,,	240
Pomegranate, seedlings	...	,,	7
Pomelo, budded	...	,,	13
Pigeon peas	...	lb.	17
Rambutan, seedlings	...	nos.	301
Rice, seed	...	lb.	8,744
Sapodilla, marcotts	...	nos.	5
Sapodilla, seedlings	...	,,	71
Soursop, seedlings	...	,,	36
Star apple, seedlings	...	,,	7
Sweet potatoes, vines	...	,,	62,800
Yams	...	lb.	2,490

Appendix III

DOMESTIC EXPORTS, 1953

Items	*Unit of Quantity*	*Quantity*	*Value*	*Percentage of Total value*
	Cental		£	
Cloves	of 100 lb.	182,468	6,011,197	83.82
Clove bud and stem oil	lb.	178,814	99,320	1.39
Copra	ton.	5,815	403,719	5.63
Coconuts	cwt.	17,695	29,827	0.42
Oil cake	cwt.	59,192	78,659	1.09
Soap, common and toilet	cwt.	299	1,023	0.01
Coconut oil	cwt.	94,819	465,988	6.49
Mangrove bark	ton.	---	—	—
Chillies	cwt.	891	9,810	0.13
Fruit, fresh	cwt.	3,807	3,486	0.05
Bêche-de-mer	cwt.	115	705	0.01
Tobacco, unmanufactured	lb.	11,944	512	0.01
Ox hides	cwt.	830	8,532	0.12
Skins, sheep and goat	cwt.	216	2,418	0.03
Livestock	No.	59	181	—
Forest products	value	—	1,208	0.02
Kapok	cwt.	738	9,066	0.12
Fibres, manufactured	ton.	607	2,137	0.03
Shells, marine	cwt.	4,532	25,462	0.36
Fish, dried or salted	cwt.	95	1,154	0.02
Fish, fresh	cwt.	7	29	—
Lime	cwt.	6,488	695	0.01
Seaweed	ton.	89	4,626	0.07
Other unclassified natural products Other articles	value	—	11,795	0.17
			7,171,549	100.00

Appendix IV

APPROXIMATE PRODUCTION OF CLOVES IN FRASILA OF 35 lb. FOR 35 CROP YEARS

(1st July to 30th June)

(Based on receipts of cloves at the Central Market and C.G.A.)

Season	*Zanzibar Frasila*	*Pemba Frasila*	*Total Frasila*	*Mean crop per season in 5-year periods Frasila*
1918/19	259,273	565,229	824,502	—
1919/20	93.847	168,703	262,550	—
1920/21	231,831	316,446	548,277	—
1921/22	65,819	200,983	266,802	—
1922/23	291,417	690,498	981,915	576,809
1923/24	75,027	236,767	311.794	474,267
1924/25	240,952	520,490	761.442	574,046
1925/26	219,192	392.622	611,814	586,753
1926/27	203,843	529,186	733,029	679.398
1927/28	190,370	500,382	690.752	621,766
1928/29	74,828	125,740	200,568	599,521
1929/30	318,647	610,296	928,943	633,021
1930/31	51.796	201,320	253,116	561,281
1931/32	175,070	760,786	935,856	601,847
1932/33	242,772	244,594	487,366	561,170
1933/34	146,098	781,090	927.188	706,494
1934/35	360,037	503,415	863,452	693,395
1935/36	65,938	232.571	298,509	702.474
1936/37	45,096	351,568	396,664	592,636
1937/38	446,500	909.416	1.355,916	768,346
1938/39	39,879	115.211	155,090	613,926
1939/40	168,041	501,474	669,515	575,139
1940/41	146,323	575,277	721,600	659,757
1941/42	297,578	889,550	1,187,128	817,850
1942/43	40,049	223,691	263,740	599,414
1943/44	263,423	777,218	1,040,641	776,525
1944/45	200,417	459,396	659,813	774,584
1945/46	26,493	161,075	187,568	667,778
1946/47	170.280	924,329	1.094.609	649,074
1947/48	30,914	280,986	311.900	658,906
1948/49	81,700	310,971	392,671	549,312
1949/50	153,888	430,253	584,141	514,178
1950/51	158,588	1,081,786	1,240,374	724,739
1951/52	45,892	290,007	335,899	572,977
1952/53	91,417	82,328	173,745	545,366
Average for 35 seasons	163,235	455,590	618,825	—

MONTHLY AND ANNUAL RAINFALL TOTALS FOR THE YEAR 1953 FOR STATIONS IN ZANZIBAR AND PEMBA

		Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total 1953	Total 1952
Zanzibar Clove Areas															
Kizimbani ...	Rainfall in ins. ...	3.46	1.76	5.59	16.66	22.31	0.08	5.08	4.97	4.27	7.57	5.21	2.67	79.63	42.78
	No. of wet days ...	12	10	22	24	21	1	10	10	21	19	16	10	176	146
Mkwajuni	Rainfall in ins. ...	0.62	1.01	7.40	12.96	13.01	0.54	2.22	2.98	3.32	4.86	3.65	4.54	57.11	32.40
	No. of wet days ...	3	6	12	18	19	3	8	15	15	10	13	15	137	94
Selem	Rainfall in ins. ...	1.84	1.61	5.75	11.71	16.05	0.05	3.95	3.16	4.49	7.44	5.57	2.07	63.69	36.03
	No. of wet days ...	10	9	19	26	22	2	10	16	19	20	17	10	180	125
Mkokotoni ...	Rainfall in ins. ...	0.00	0.00	4.60	12.40	13.41	0.35	1.70	4.96	4.26	6.76	3.44	1.43	53.31	38.06
	No. of wet days ...	–	–	9	16	18	1	2	7	11	8	7	4	83	80
Mwera	Rainfall in ins. ...	3.63	2.40	4.80	13.38	17.72	0.95	4.98	4.00	3.17	3.60	9.66	4.56	72.85	†
	No. of wet days ...	6	5	7	17	12	2	6	6	7	12	10	9	99	†
Zanzibar Non-Clove Areas															
Chukwani	Rainfall in ins. ...	2.28	2.12	6.88	*	*	*	*	*	*	*	*	*	*	31.54
	No. of wet days ..	12	10	20	–	–	–	–	–	–	–	–	–	–	107
Kisauni airfield ...	Rainfall in ins. ...	2.62	2.10	7.98	10.06	21.78	0.02	4.62	3.01	2.66	2.00	10.62	1.40	68.87	31.79
	No. of wet days ...	11	9	24	25	21	1	7	14	15	11	16	10	164	119
Victoria Gardens ...	Rainfall in ins. ...	2.15	1.46	4.81	11.59	21.34	0.00	6.56	3.67	3.25	3.17	8.94	3.45	70.39	29.60
	No. of wet days ...	8	8	17	23	22	–	7	15	18	13	14	11	156	98
Chwaka	Rainfall in ins. ...	4.33	2.02	6.73	21.92	27.11	0.15	6.17	5.27	1.35	3.57	4.78	1.78	85.18	24.83
	No. of wet days ...	7	7	10	26	21	3	10	14	16	11	8	6	139	87
Hanyegwa Mchana	Rainfall in ins. ...	1.98	1.84	5.57	21.76	24.73	0.33	6.21	3.58	2.55	5.60	5.97	3.60	83.72	25.12
	No. of wet days ...	8	4	12	27	20	2	9	9	14	10	9	4	128	89
Makunduchi ...	Rainfall in ins. ...	1.37	1.92	4.90	25.93	26.86	0.26	4.85	4.36	0.65	2.29	3.36	4.33	81.08	44.33
	No. of wet days ...	2	7	8	23	17	2	5	8	2	4	5	5	88	107
Muongoni	Rainfall in ins. ...	3.54	2.88	9.42	18.50	21.06	0.06	4.68	2.51	0.78	4.66	5.08	0.51	73.68	30.12
	No. of wet days ...	8	9	13	26	17	1	7	8	7	7	9	6	118	97
Kisongoni	Rainfall in ins. ...	2.14	1.88	7.46	15.69	17.58	0.14	3.05	4.97	4.59	4.35	4.51	3.71	70.07	36.89
	No. of wet days ...	8	6	16	29	22	3	6	19	16	9	10	8	152	102

Pemba Clove Areas															
Matangatwani ...	Rainfall in ins. ...	1.29	2.70	9.94	15.70	16.90	0.78	5.56	3.79	1.52	6.21	7.94	1.70	74.23	45.07
	No. of wet days ...	5	9	15	23	27	5	17	17	16	14	13	7	168	130
Wete	Rainfall in ins. ...	1.47	2.81	11.01	19.77	20.82	1.40	6.07	4.08	1.54	6.59	10.16	3.20	88.92	55.01
	No. of wet days ...	8	6	14	25	24	5	15	16	9	9	12	16	159	119
Mkoani	Rainfall in ins. ...	1.91	6.50	5.61	3.96	31.16	0.20	5.68	4.10	1.78	4.26	7.07	3.56	102.79	45.82
	No. of wet days ...	12	10	14	26	24	4	12	13	13	8	9	7	152	125
Mtambile	Rainfall in ins. ...	6.79	7.24	7.45	31.29	28.19	0.72	7.15	4.03	1.48	3.52	5.45	5.27	108.58	50.18
	No. of wet days ...	14	17	17	27	22	5	13	13	9	11	15	14	177	151
Limbani	Rainfall in ins. ...	2.21	1.67	6.89	22.28	19.10	0.80	5.81	3.24	1.23	5.84	6.67	3.17	78.91	47.61
	No. of wet days ...	6	9	14	26	27	7	21	22	13	18	18	16	197	101
Wesha	Rainfall in ins. ...	1.79	5.10	5.97	20.62	22.04	0.58	5.47	4.01	1.50	3.49	5.05	3.26	78.88	47.13
	No. of wet days ...	11	9	14	25	22	5	18	20	8	13	14	13	172	125
Chake Chake ...	Rainfall in ins. ...	2.56	1.52	4.28	31.72	23.97	0.38	6.80	4.97	0.65	3.36	4.66	2.76	87.63	†
	No. of wet days ...	6	7	10	27	23	3	15	14	9	7	15	8	144	†
Chambani	Rainfall in ins. ...	5.96	2.31	5.53	32.86	24.95	0.69	6.35	3.56	1.19	2.56	4.45	5.15	95.56	34.02
	No. of wet days ...	10	4	6	24	23	4	11	8	7	7	7	12	123	84
Pemba Non-Clove Areas															
Ole	Rainfall in ins. ...	4.55	0.53	2.73	26.06	23.01	0.73	5.31	4.31	1.21	3.47	1.51	3.67	77.09	33.59
	No. of wet days ...	8	3	4	24	23	6	15	17	11	13	10	11	145	88
Kigomasha ...	Rainfall in ins. ...	1.91	0.84	3.45	15.61	16.50	0.47	4.42	5.40	2.49	7.60	5.05	0.65	64.39	45.23
	No. of wet days ...	6	4	10	21	22	6	13	21	15	12	8	8	146	111

† Record incomplete.

* Station closed.